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THE EFFECT OF OUTDOOR EXPERIENTIAL PROGRAMS UPON ENVIRONMENTAL BELIEFS: DO THEY MAKE A DIFFERENCE?

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Introduction

One of the underlying tenets of many outdoor and environmental education programs is that direct interaction with natural settings will influence a participant's beliefs and values toward the environment. Although a number of authors argue that increased participation in outdoor recreation was a key factor in augmenting the development of the environmental movement in North America during the early 1970's (Dunlap & Hefferman, 1975; Harper, 1996), others would suggest that research on the relationship between outdoor activities, and environmental concerns and behaviors, remains nebulous (Nord, Luloff, & Bridger, 1998).

Direct participation in the natural environment through outdoor recreation is thought to impact an individual's perceptions and beliefs regarding the environment in the following ways: (a) a heightened appreciation of the natural environment, (b) greater knowledge concerning the natural environment, and (c) an enhanced acceptance of behavior and social norms associated with pro-environmental beliefs (Heywood, 2002).

Concomitant with these factors are the related findings that suggest participants engaged in appreciative outdoor recreation activities such as hiking, camping, and viewing scenery; are more likely to express pro-environment beliefs than those engaged in more consumptive activities, such as hunting and fishing (Jackson, 1987; Nord et al., 1998). In addition, some studies have found that outdoor recreationists are more concerned with environmental issues that directly impact their activities, rather than more global issues, such as air pollution, or water quality (Thapa & Graefe, 2003).

One question that emerges from these findings is whether or not they are generalizable to outdoor education-oriented programs. As direct experience with natural settings and environments are often critical components in many outdoor education curricula, does participation in these types of programs lead to a change in the environmental views and beliefs held by participants? For example, Schuett and Ostergren (2003) found that levels of environmental concern and involvement differ by the specific outdoor activity in which an individual engages. Thus, there may be a relationship between the type of activity voluntarily engaged in by outdoor recreation participants and the environmental attitudes and concerns. But does this connection also transfer to outdoor education programs and the direct experience with the natural and outdoor environment that these programs often offer?

This study examined the effect of a semester-long, outdoor leadership course upon the environmental beliefs and attitudes of participants. Embedded within this study is a three-week field expedition as part of the curriculum for the treatment group. Two research questions were examined. First, are there initial differences in demographic variables between the treatment and

control group students? Second, after using the data generated at the beginning of the semester from both groups as a covariate, are there differences in response to the statements contained in the modified NEP between the stated environmental beliefs of students in the treatment and control groups across time (mid-term and end of semester)?

Methods

Instrument

The design for this study consisted of a three-phase data collection within the framework of a treatment and control group structure. In order to measure environmental attitudes and beliefs, a modified version of the New Environmental Paradigm—NEP, (Dunlap & Van Leire, 1978) was developed based on the recent works of Ewert and Baker (2001), and Place (2000). In addition to including the original 12 statements regarding beliefs about the earth and human-natural environment interactions, the revised instrument also included questions regarding economic choices, recreation behavior, and restricting personal freedom, resulting in a 25 item questionnaire. The questionnaire used a four-point Likert scale anchored by 1 = *Strongly Disagree*, and 4 = *Strongly Agree*. Additional information was collected on the students' age, gender, and place of residence (urban or rural).

It should be noted, however, that the NEP is not without its critics. One criticism is that the instrument is typically treated as measuring one dimension or unified system of beliefs. Other scholars posit that the NEP actually provides a measure of different types or dimensions of environmental beliefs (Nooney, Woodrum, Hoban, & Clifford, 2003). In this study, the modified NEP was articulated along two dimensions: *anthropocentric* and *biocentric*. That is, the item statements were categorized as either being anthropocentric (human-centered) or biocentric (non-human centered). Examples of the items and their classification are listed in Table 1.

Data Collection

Data were collected via the instrument at three different phases. These phases included: (a) the beginning of the semester, (b) toward the middle of the semester (just prior to the three-week field expedition for the treatment group), and (c) toward the end of the semester (just after returning from the three-week field expedition for the treatment group). The study instrument was distributed to each group, within the same timeframes. In addition, the 25 items of the questionnaire were treated as the dependent variables for this study.

Sample

The sample frame consisted of upper division college students attending a large Midwestern university during the winter semester of 2003. The treatment group consisted of 18 students enrolled in a semester-long, outdoor leadership training program. The control group consisted of approximately 45 college students enrolled in a legal liability course offered through the same department.

TABLE 1
Items Used to Assess a Person's Environmental Attitude

Biocentric Statements

We are approaching the limit of the number of people the earth can support.
Mankind is severely abusing the environment.
Humans must live in harmony with nature in order to survive.
The effects of pollution are worse than we realize.
When humans interfere with nature, it often produces disastrous consequences.
The earth is like a spaceship with only limited room and resources.
The balance of nature is very delicate and easily upset.
We have to develop a steady-state economy where industrial growth is controlled.
There are limits to growth beyond which we cannot expand.
Pollution generated in this locality harms people elsewhere.
Over the next several decades, thousands of species will become extinct.
The balance of nature is extremely fragile.
I would participate in a demonstration against a company harming the environment.
I would contribute money to environmental organizations.
I would sign a petition in support of tougher environmental laws.

Anthropocentric Statements

Humans need not adapt to the natural environment because they can remake it to suit their needs.
Humans have the right to modify the natural environment to suit their needs.
Mankind was created to rule over nature.
We don't need to worry about the environment.
Plants and animals exist primarily to be used by humans.
Protecting the environment will threaten jobs for people like me.
Laws to protect the environment limit my choices and personal freedom.
A clean environment provides me with better opportunities for recreation.
Claims that current levels of pollution are changing the earth's climate are exaggerated.
I would take a job with a company I knew was harming the environment.

Results

This paper reports on the following: (a) examination and comparison of general characteristics (i.e., age, gender, residence) of the treatment and control groups in an effort to ascertain similarity between the two groups; and (b) differences between the responses to the instrument between the two groups on the mid and end of course data using ANCOVA and the beginning of semester data as the covariate. In addition, to provide a more specific understanding as to where any differences occurred, the instrument items were disaggregated along the following lines: biocentric (non-human centered) items, anthropocentric (human-centered) items, pro-environment specific consequences, con-environment specific consequences, pro-environment behaviors, and con-environment behaviors.

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In testing for demographic differences, *t*-test analyses revealed no significant differences between the treatment and control groups on the variables of age, gender, or residence. As reported earlier, the alpha level in this study was set at .05.

Using the beginning of the semester data as the covariate, Analysis of Covariance (ANCOVA) revealed significant differences between the treatment and control groups for five of the 25 items within the mid-semester data set and five within the end-of-semester data. See Tables 2 and 3 respectively. Mean comparisons revealed that all the significant differences from the ANCOVA analyses were in the expected direction. The treatment group elicited more pro-environmental biocentric beliefs and values than did its counterparts in the control group and the reverse for the anthropocentric items.

TABLE 2
Midterm Significant Differences (.05) Using ANCOVA^a

<u>Item</u>	Treatment		Control		<i>p</i>
	<u>M^b</u>	<u>M^c</u>	<u>M^b</u>	<u>M^c</u>	
The earth is like a spaceship. (B)	3.4	3.6	2.5	2.6	.02
Plants and animals exist to be used by humans. (A)	2.6	2.8	3.3	3.2	.01
The effects of pollution are worse than we realize. (B)	3.6	3.4	3.1	2.7	.05
Pollution generated in the locality harms people elsewhere. (B)	3.6	3.6	2.8	2.6	.00
I would sign a petition. (B)	3.6	3.6	2.6	2.6	.03

Note. ^a Based on a 1 to 4 point Likert scale, with 1 = *strongly disagree*, and 4 = *strongly agree*. ^b Beginning of course score. ^c Middle of course score.

M = Means.

A = Anthropocentric.

B = Biocentric.

TABLE 3
End of Term Significant Differences (.05) Using ANCOVA^a

<u>Item</u>	Treatment		Control		<i>p</i>
	<u>M^b</u>	<u>M^c</u>	<u>M^b</u>	<u>M^c</u>	
The balance of nature is very delicate. (B)	3.5	3.6	3.1	3.1	.03
Humans must live in harmony. (B)	3.4	3.4	2.9	2.7	.04
We will have to develop a steady-state economy. (B)	3.1	3.3	2.7	2.7	.04
The Earth is like a spaceship. (B)	3.4	3.4	2.5	3.0	.01
Humans can remake the environment to suit their needs. (A)	1.4	1.6	1.9	2.4	.00

Note. ^a Based on a 1 to 4 point Likert scale, with 1 = *strongly disagree*, and 4 = *strongly agree*. ^b Beginning of course score. ^c End of course score.

M = Means.

A = Anthropocentric.

B = Biocentric.

In addition, in both the mid-term and end of term data analyses, four of the five differences noted in each case, occurred in the biocentric statements while one significant difference in each case, was observed in the anthrocentric statements. Cronbach's alpha values ranged from .59 to .83, while eta² values for the 25 items ranged from .13 to .54.

Discussion

Two major findings emerged from this study. First, students engaged in the outdoor education course consistently reported higher levels of pro-environmental beliefs than did the control group. These changes were in the expected direction with the outdoor education students reporting more agreement with the biocentric items and less agreement with the anthrocentric items than their counterparts in the control group.

If consistent with previous works, the finding of higher initial pro-environmental values and attitudes may help explain some of the attitudinal discrepancies noted between those individuals engaged in outdoor education and those who typically are not. This finding may suggest that individuals are attracted to outdoor education programs because of their pre-existing belief system, and, perhaps, less so, because of any attitudinal changes that occur as a result of the course or program.

Second, despite controlling for the differences in the beginning data set, a number of these differences continued. These findings are congruent with several previous works on the relationship between participation in outdoor education-related activities, and pro-environmental beliefs and values (Thapa & Graefe, 2003). That is, even after using the statistical equalizing power of the ANCOVA routine, differences still are evident. What is unknown from this study is whether these attitudinal differences are often "brought in" to a course rather than a result of the experience.

These findings raise an interesting question as to whether or not individuals voluntarily participating in outdoor education programs have fundamental differences in personal values and attitudes regarding the environment than do their non-outdoor education counterparts. In an earlier work, Vaske, Donnelly, Wittman, and Laidlaw (1995) suggest that value differences in outdoor recreation may be socially learned. Likewise, Dyck, Schneider, Thompson, and Virden (2003) posit that there may be a relationship between level of specialization, as originally conceptualized by Bryan (1977), and environmental attitudes.

In either case, one possible explanation for the findings of this study may lie in the fact that the participants in outdoor education programs, unlike their counterparts in non-outdoor education groups, may already be more sensitized and informed about environmental issues and threats. They often have more experience in the outdoors; are often in greater contact with like-minded individuals; and, may be more culturally aware of the overall environmental scene.

A second possible explanation may lie in the treatment itself. Although the course is marketed and conducted as an outdoor education/leadership training program, and not an environmental education course, it seems reasonable to assume that the close and intimate contact that the outdoor education students had with the natural environment may have had some effect. Perhaps this contact served as a catalyst to re-emphasize pre-existing and/or emergent attitudes and feelings regarding the environment. Being in the mountains or desert may remind one of the connection he or she has with the natural world, and the responsibilities an individual has toward the natural environment. Whatever the causal factors involved in the development and expression of those feelings and attitudes, this study suggests that outdoor education students, as manifested in this work, presented differences in environmental attitudes compared with their non-outdoor education counterparts.

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